Listing of the Claims:

1. (Currently Amended) An apparatus for controlling a position of a fluid operated cylinder having at least one fluid chamber defined by a piston located within a housing for movement between first and second end limits of travel, the apparatus comprising:

at least one electrically actuated proportional flow control valve connected in fluid communication with each inlet port and each outlet port of the fluid operated cylinder to be controlled for selectively and proportionally controlling fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder to be controlled;

at least one pressure sensor for measuring fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled;

at least one discrete position sensor associated with the fluid operated cylinder to be controlled for sensing a discrete predetermined position of the piston within the cylinder to be controlled; and

a control program executable by a control device operably ~~connectable~~ connectible to the at least one valve, the at least one pressure sensor, and the at least one position sensor for controlling actuation of the at least one valve, the control program configured to calculate a pressure in the at least one fluid chamber required to move the piston a selected distance from a predetermined position within the housing ~~in response to pressure measured by the at least one pressure sensor and in response to position measured by the at least one position sensor~~, and for controlling the at least one electrically actuated proportional flow valve to obtain the calculated pressure within the at least one fluid chamber corresponding to the selected distance of movement for the piston within the cylinder to be controlled.

2. (Original) The apparatus of claim 1, wherein the at least one discrete position sensor further comprises:

a first position sensor located adjacent a midpoint of the operating stroke of the fluid operated cylinder; and

a second position sensor located adjacent one end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining the at least one chamber.

3. (Previously Presented) The apparatus of claim 4 further comprising:

the at least one electrically actuated proportional flow valve including a first valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow into the first expandable fluid chamber and a second valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow out of the first expandable fluid chamber.

4. (Previously Presented) The apparatus of claim 1 further comprising:

the at least one fluid chamber including a first expandable fluid chamber adjacent one end of travel of the piston in the cylinder to be controlled and a second expandable fluid chamber adjacent another end of travel of the piston in the cylinder to be controlled.

5. (Original) The apparatus of claim 4 further comprising:

the at least one pressure sensor includes a first pressure sensor associated with the first expandable fluid chamber and a second pressure sensor associated with the second expandable fluid chamber.

6. (Original) The apparatus of claim 4 further comprising:

the at least one discrete position sensor including a first position sensor located adjacent a midpoint of the fluid operated cylinder operating stroke to be controlled, a second position sensor located adjacent one end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining one chamber, and a third position sensor located adjacent an opposite end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining another chamber.

7. (Previously Presented) The apparatus of claim 1 further comprising:

the control program configured for initializing a home position when the piston is sensed by the at least one discrete position sensor located adjacent a midway position with respect to the cylinder to be controlled.

8. (Cancelled)

9. (Previously Presented) The apparatus of claim 1 further comprising:

means for biasing the piston toward a discrete centered position with respect to the cylinder to be controlled.

10. (Currently Amended) A method for controlling a fluid operated cylinder having at least one fluid chamber defined by a piston located within a housing for movement between first and second end limits of travel, the method comprising the steps of:

employing at least one electrically actuated proportional flow valve fluidly connected to at least one fluid chamber of the fluid operated cylinder;

measuring a fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled with at least one pressure sensor;

sensing a discrete position of the piston within the cylinder with at least one discrete position sensor;

selecting a distance to move the piston from a predetermined position within the housing;

calculating a pressure to be applied to the at least one fluid chamber required to move the piston the selected distance from the predetermined position within the housing based on ~~the pressure measured by the at least one pressure sensor and~~ the position measured by the at least one position sensor; and

adjusting the pressure within the at least one fluid chamber to correspond to the calculated pressure by selectively and proportionally controlling fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder to be controlled with the at least one electrically actuated proportional flow valve.

11. (Previously Presented) The method of claim 10, wherein the position sensing step with the at least one discrete position sensor further comprises the steps of:

locating a first position sensor adjacent a midpoint of an operating stroke of the fluid operated cylinder;

locating a second position sensor adjacent one end of travel of the piston in the housing;

sensing a discrete position adjacent one end of travel of the piston with respect to the housing with the second position sensor; and

decelerating the piston to a soft stop prior to contact with an end wall of the housing defining the at least one chamber in response to the second position sensor.

12. (Previously Presented) The method of claim 13, wherein the controlling fluid flow step with at least two electrically actuated proportional flow valves further comprises the steps of:

employing a first valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow into the first expandable fluid chamber; and

employing a second valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow out of the first expandable fluid chamber.

13. (Previously Presented) The method of claim 10, wherein the at least one fluid chamber further comprises the steps of:

employing a first expandable fluid chamber adjacent one end of travel of the piston in the housing; and

employing a second expandable fluid chamber adjacent another end of travel of the piston in the housing.

14. (Previously Presented) The method of claim 13, wherein the pressure sensing step with at least one pressure sensor further comprises the steps of:

employing a first pressure sensor associated with the first expandable fluid chamber; and

employing a second pressure sensor associated with the second expandable fluid chamber.

15. (Previously Presented) The method of claim 13, wherein the position sensing step with at least one discrete position sensor further comprises the steps of:

employing a first position sensor located adjacent a midpoint of an operating stroke of the fluid operated cylinder;

employing a second position sensor located adjacent one end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining one chamber; and

employing a third position sensor located adjacent an opposite end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining another chamber.

16. (Previously Presented) The method of claim 10 further comprising the steps of:

positioning at least one discrete position sensor substantially adjacent a midpoint of an operating stroke of the fluid operated cylinder to be controlled; and

initializing a home position when the piston is sensed by the at least one discrete position sensor to be located adjacent the midpoint of the operating stroke.

17. (Previously Presented) The method of claim 10, wherein the step of calculating a pressure further comprises the steps of:

calculating a required pressure in the at least one fluid chamber for moving the piston a desired distance within the housing from a discrete centered position located midway with respect to the housing; and

controlling the at least two electrically actuated proportional flow valves to obtain the calculated pressure within the at least one expandable fluid chamber corresponding to the desired distance of movement for the piston within the housing.

18. (Previously Presented) The method of claim 10 further comprising the step of:

biasing the piston toward a discrete centered position with respect to the housing.

19. (Currently Amended) An apparatus for controlling a fluid operated cylinder having two fluid chambers defined by a piston located within a housing for movement between first and second end limits of travel, the apparatus comprising:

a manifold having at least one fluid inlet port, at least one fluid outlet port and at least one fluid exhaust port;

four electrically actuated proportional flow valves, two valves connected to each port of the fluid operated cylinder to be controlled for selectively and proportionally controlling fluid flow into and out of the two fluid chambers of the fluid operated cylinder to be controlled;

two pressure sensors, one pressure sensor for measuring fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled;

at least one discrete position sensor located adjacent a midpoint of the operating stroke of the fluid operated cylinder to be controlled for sensing a discrete centered position of the piston within the cylinder to be controlled; and

a controller operably connected to the four valves, the two pressure sensors, and the at least one position sensor for controlling actuation of the four valves, the controller operable for calculating a pressure within each of the two fluid chambers required for moving the piston a selected distance from the discrete centered position ~~in response to pressure measured by the two pressure sensors and in response to position measured by the at least one position sensor~~, and for controlling the four electrically actuated proportional flow valves to obtain the calculated pressure within each of the two fluid chambers corresponding to the desired distance of movement for the piston within the housing.

20. (Original) The apparatus of claim 19 further comprising:

the at least one discrete position sensor including a first position sensor located adjacent a midpoint of the operating stroke of the fluid operated cylinder to be controlled, a second position sensor located adjacent one end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining the first chamber, and a third position sensor located adjacent an opposite end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining the second chamber.

21. (Previously Presented) The apparatus of claim 19 further comprising:

a control program executable by the controller for initializing a home position when the piston is sensed by the at least one discrete position sensor located adjacent the midway position with respect to the housing.

22. (Cancelled)

23. (Previously Presented) The apparatus of claim 1, wherein the electrically actuated proportional control valve includes a piezo adapted for operating with a variable voltage for enabling selective adjustment of the fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder based on the voltage applied to the piezo.

24. (Previously Presented) The apparatus of claim 1, wherein the electrically actuated proportional control valve includes a piezo adapted for operating

with a variable electric current for enabling selective adjustment of the fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder.

25. (Cancelled)

26. (Cancelled)

27. (Previously Presented) The apparatus of claim 19, wherein each of the four electrically actuated proportional control valve includes a piezo adapted for operating with a variable voltage for enabling selective adjustment of the fluid flow into and out of the two fluid chambers of the fluid operated cylinder based on the voltage applied to the piezo.

28. (Previously Presented) The apparatus of claim 19, wherein each of the four electrically actuated proportional control valves includes a piezo adapted for operating with a variable electric current for enabling selective adjustment of the fluid flow into and out of the two fluid chambers of the fluid operated cylinder.

29. (Currently Amended) The apparatus of claim 1, the control device further comprising a controller for executing the control program, the controller operably connected to the at least one valve, the at least one pressure sensor, and the at least one position sensor, and operable for receiving an input corresponding to the distance the piston is to be moved from the predetermined position within the housing.

30. (Previously Presented) The apparatus of claim 1, further comprising manifold having at least one fluid inlet port, at least one fluid outlet port,

and at least one fluid exhaust port, the manifold fluidly connected to the at least one electrically actuated proportional control valve.